

All about oil and gas*

Technological advancement has set the stage for another boom in Alberta's non-oil sands oil and natural gas industry. Until the last few years, the sun had slowly been setting on Alberta's conventional oil and natural gas industry. Oil production had declined from a peak of 1.43 million barrels per day in 1973 to a low of around 460,000 barrels per day in 2010.



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June Warren, Nickle's Energy Group

But things are changing for the better, as increased implementation of long horizontal wells and multistage fracturing in tight oil plays across the province—not to mention new provincial royalty incentives to encourage drilling—has crude oil drilling activity and production on the upswing.

In fact, the tight oil revolution that began in the United States and gradually moved north into Alberta marks the dawning of a new day for oil and natural gas exploration and production in the province.

In Alberta, the new technology is being used in an increasing number of oil plays. Among the most advanced plays are the Cardium in west-central Alberta, the Beaverhill Lake Carbonates near Swan Hills, the Viking in east-central Alberta and at Red Water north of Edmonton, in the Pernisot at Princess in southern Alberta and at Judy Creek in northwestern Alberta.

Additionally, emerging liquids-rich plays like the Montney and Duvernay shale show great promise. In fact, the Duvernay play may have the most potential going forward.

At the end of 2013, industry giants such as Chevron Canada Limited and Encana Corporation reported strong liquids yields, particularly for valuable condensate, and producers are preparing to ramp up activity this year.

The Duvernay is often compared to the prolific Eagle Ford of Texas because they are both shale plays that offer a full spectrum, from dry gas through liquids-rich gas to oil. Many other shale plays, such as the Horn River Basin in British Columbia and the Marcellus or Barnett south of the border, are much more gas focused.

In terms of the potential size of the play area, the richness of the source rock and even some of the early production results, the Duvernay "is well on its way to being as big or bigger than the Eagle Ford," Canadian Discovery Ltd. has proclaimed.

The increase in horizontal drilling activity is expected to offset the steep decline in Alberta conventional production that would otherwise be expected.

The Alberta Energy Regulator estimates the remaining total established reserves of conventional crude oil in Alberta to be 1.8 billion barrels, representing about

one-third of Canada's remaining conventional reserves. This is a year-over-year increase from 2012 of five per cent, resulting from all reserve adjustments less production in 2013.

Alberta's production of conventional crude oil totalled 213 million barrels in 2013, an increase of five per cent.

The province is also the largest contributor to Canadian oil and equivalent production and is the only contributor of upgraded and non-upgraded bitumen, which are the marketed components of raw bitumen production.

Alberta is Canada's largest producer of marketable natural gas. In 2013, Alberta produced 69 per cent of Canada's total production, down from 70 per cent in 2012. Over the same period, Canada's second-largest contributor, British Columbia, increased its share from 25 per cent to 26 per cent.

Although relatively low natural gas prices have reduced drilling activity in Alberta for that commodity the past few years, when prices rebound, the province will be well positioned to capitalize.

Canada is the third-largest natural gas producer in the world, with of the country's gas being produced in Alberta. According to provincial figures, at the end of 2012, remaining established reserves of conventional natural gas stood at 33 trillion cubic feet, while remaining established coalbed methane gas reserves stood at 2.4 trillion cubic feet. The province estimates the remaining ultimate potential of marketable conventional natural gas at 74 trillion cubic feet.

Although conventional natural gas remains a very important part of Alberta's natural gas supply, horizontal drilling and multistage fracturing now allow for development of natural gas from a new source—unconventional natural gas resources.

Aside from coalbed methane, Alberta's unconventional natural gas resources include tight gas (natural gas trapped in low-permeability sedimentary rocks, such as sandstone or limestone) and shale gas (trapped in shale rock). ■

*This publication contains information about Alberta's oil and gas industry, excluding oil sands. For information on the oil sands, please refer to the Alberta Oil Sands Industry Quarterly Update on this website.

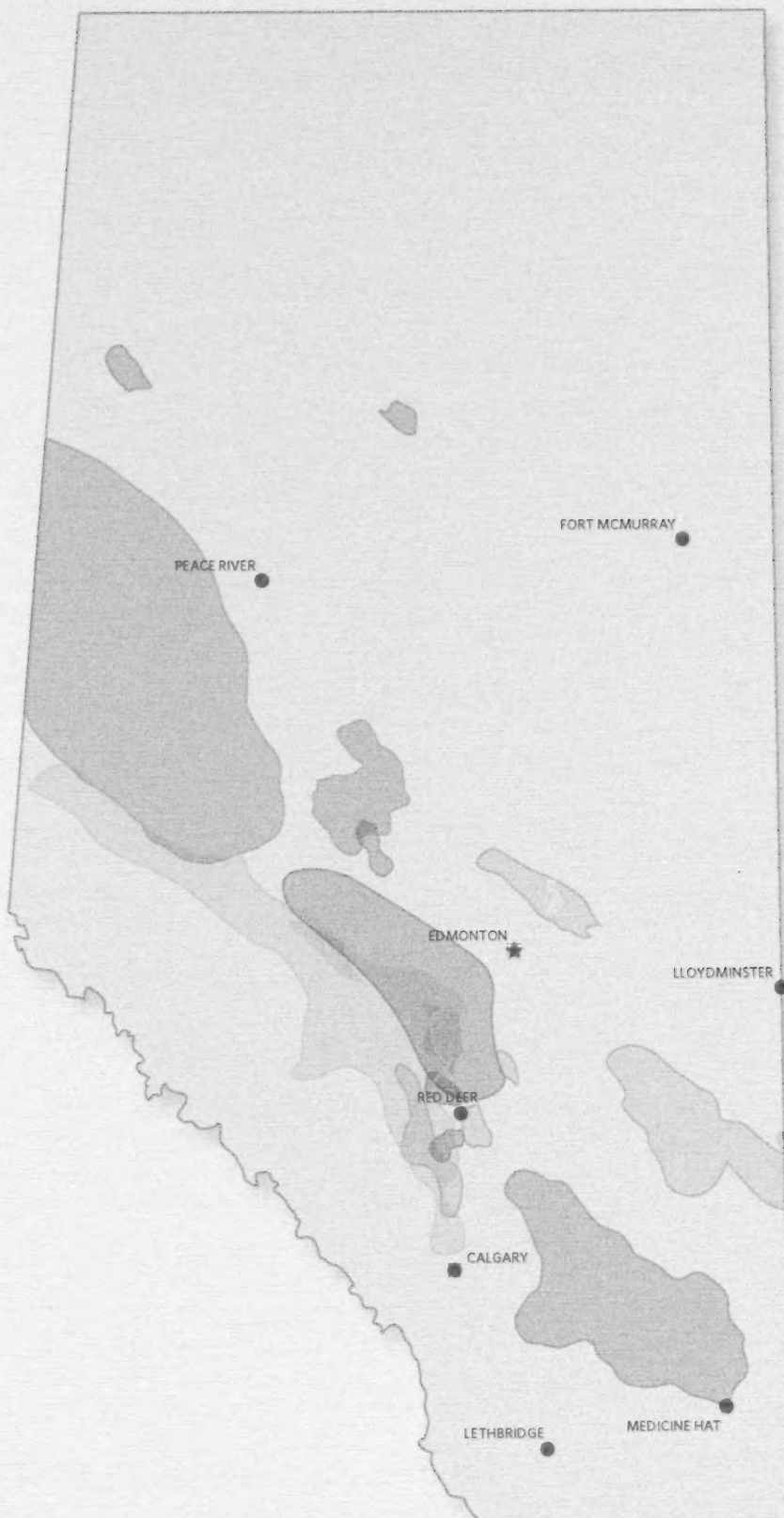
Oil plays

The Alberta Energy Regulator (AER) estimates the remaining established reserves of conventional crude oil in Alberta to be 1.7 billion barrels, representing about one-third of Canada's remaining conventional reserves.

This is a year-over-year increase of 9.5 per cent, resulting from production, reserves adjustments and additions from drilling that occurred during 2011.

In 1994, based on the geological prospects at that time, the AER estimated the ultimate potential of conventional crude oil to be 19.7 billion barrels. Given recent reserve growth in low permeability, or tight oil plays, the AER believes that this estimate may be low.

Starting in 2010, total crude oil production in Alberta reversed the downward trend that was the norm since the early 1970s. In 2010 and 2011, light-medium crude oil production began to increase as a result of increased, mainly horizontal, drilling activity with the introduction of multistage hydraulic fracturing technology.



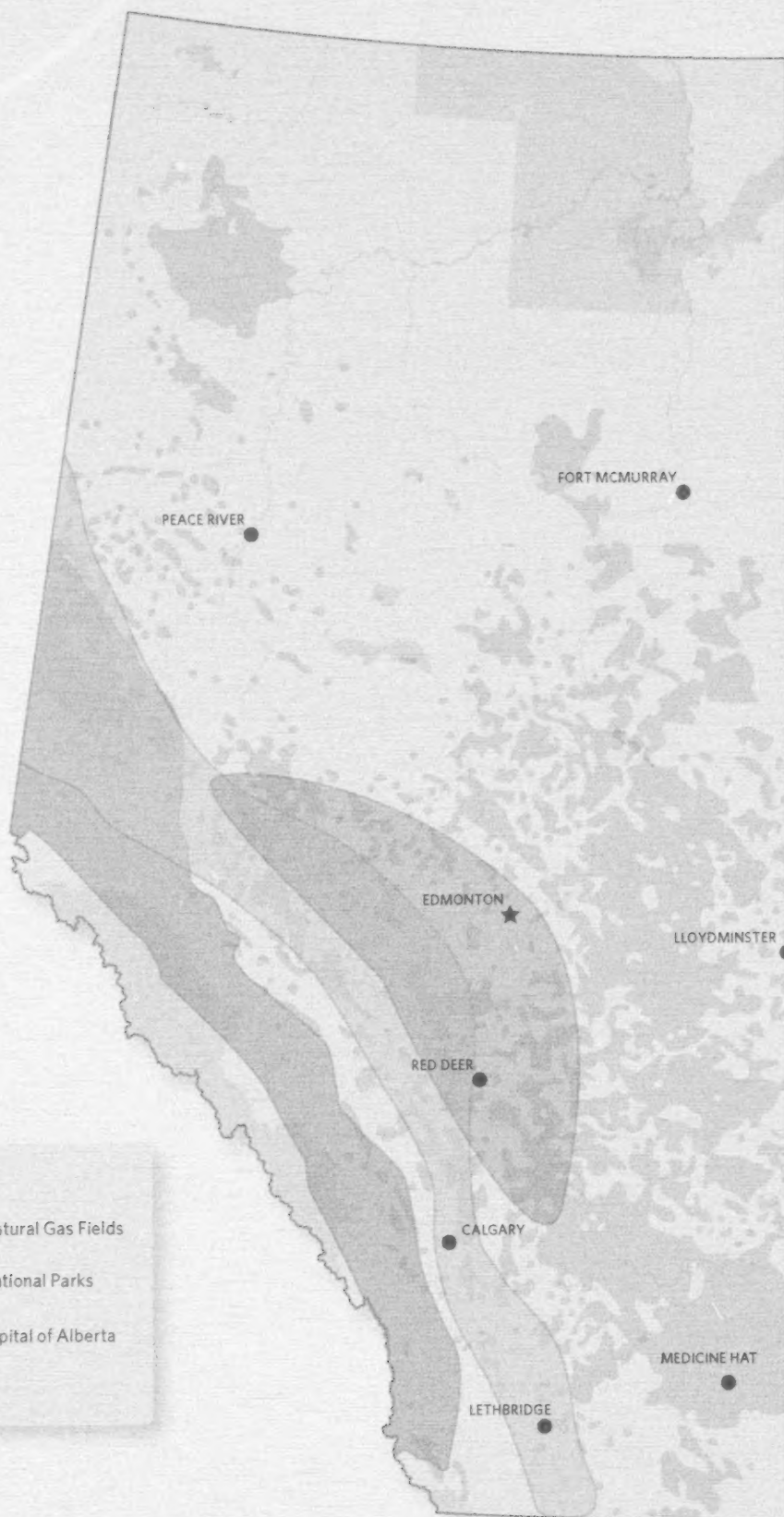
OIL PLAYS

-  Beaverhill Lake/Swan Hills/Slave Point Carbonate
-  Cardium
-  Duvernay
-  Montney/Doig
-  Pekisko
-  Viking

Natural gas plays

Alberta's natural gas bounty is plentiful and is produced from both conventional and unconventional reserves. While the majority of the province's natural gas is still produced from conventional sources, growing natural gas volumes from coal, shale and tight formations will also be strong contributors going forward.

Alberta has a large natural gas resource base, with remaining established reserves of about 33 trillion cubic feet and estimated potential of up to 500 trillion cubic feet of natural gas from the coalbed methane resource. In addition, a large-scale resource assessment of shale gas potential in Alberta is underway and could significantly add to the natural gas prospects for the province.



GOVERNMENT

UPDATE



ALBERTANS INVITED TO PROVIDE INPUT ON ENERGY DEVELOPMENT IN AND NEAR URBAN AREAS

Fact sheets and educational information on safety standards and environmental regulations will be available, and a series of questions will help gather ideas and opinions on energy development in and near urban areas.

The online feedback form will be available until July 15 and will be supplemented by discussions with local stakeholders in Grande Prairie, Red Deer, Calgary and Lethbridge between June 16 and June 24.

The ministries of energy, health and municipal affairs, the Alberta Energy Regulator, and the Property Rights Advocate will participate in the discussions using the same information available to online participants.

"Alberta has a rich history of energy development and strict environmental regulations and safety standards in place," said Minister of Energy Diana McQueen.

"With this online tool, municipalities, industry, stakeholder organizations and all interested Albertans will have the opportunity to learn more about how energy development is regulated and monitored in Alberta, and can offer their suggestions on how provincial regulations and policies can balance rapid urban growth and future energy development. I look forward to hearing Albertans' views."

ALBERTA'S ECONOMIC FRAMEWORK CREATES PLAN TO STRENGTHEN AND BROADEN THE ECONOMY

The Building on Alberta's Strengths: Alberta's Economic Development Framework encourages the province's diverse economic development community to rally around a shared vision for growing the Alberta economy.

The framework serves as both a guide on tactics and strategies for economic developers across the province and a catalyst for starting conversations on how Alberta can bring this economic vision to life. While natural resources continue to anchor Alberta's economy, the framework lays the foundation for a more integrated and intentional approach to economic development planning in the province.

"Our economy is strong... Alberta's recent A-plus on the Conference Board of Canada's provincial economic report card and our ranking as the most entrepreneurial

province in Canada prove that. The framework provides a common vision for us to work together with the economic development community to ensure future generations continue to enjoy the advantages of a prosperous economy," said Premier Dave Hancock.

The framework is a long-term plan that focuses on expanding market access, improving resource-based and resource-related industries, enabling firms with high growth potential to broaden Alberta's economic base, and inspiring entrepreneurs to innovate, commercialize and expand businesses across the province.

Work on the four priority areas outlined in the framework is already underway. For instance, Alberta's International Strategy 2013 is helping to expand market access by creating a new export council for small- and medium-sized entrepreneurs.

PREMIER HANCOCK CONGRATULATES PETER WATSON ON HIS APPOINTMENT TO THE NATIONAL ENERGY BOARD

On June 13, Premier Dave Hancock congratulated Peter Watson, the deputy minister of the Executive Council of Alberta, on his new role as chair of the National Energy Board.

"I'm very happy to congratulate Peter on his appointment as the new chair of the National Energy Board. Peter's distinguished tenure in the Alberta public service has been characterized as someone who is passionate about resource management," Hancock said.

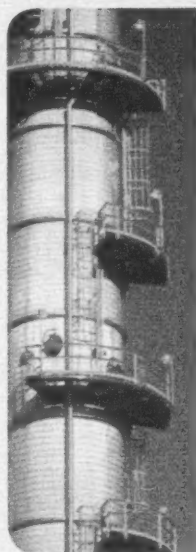
"Peter was a key figure in the development of Alberta's Provincial Energy strategy, our Water for Life strategy, and our Climate Change and Cumulative Effects Management [strategies]. He's been a driving force in the development of our carbon capture and storage initiative and has worked hard behind the scenes to build Alberta's market capacity for our natural resources around the world."

ALBERTA WELCOMES FEDERAL COMMITMENT TO ACTION ON RAIL SAFETY

Alberta Minister of Transportation Wayne Drysdale issued the following statement in response to the federal government's [April 2014 announcement](#) to improve rail safety in Canada: ►



Government update *continued*



"We welcome the federal government's commitment to specific actions to increase safety in the movement of dangerous goods by rail across Canada. The announcement provides Albertans and all Canadians with assurance that dangerous goods are being moved safely through their communities.

"We will work with the federal government and industry to determine the best way to address these recommendations about railcar standards and speed, route planning and emergency-response plans as they relate to short-haul lines under provincial jurisdiction.

"Alberta has already taken quick action and implemented previous Transportation Safety Board recommendations from the Lac-Mégantic investigation for railways under provincial jurisdiction. Those recommendations addressed uncontrolled movements by unattended locomotives and tanker cars carrying dangerous goods.

"Alberta Transportation officials conduct compliance reviews of industrial railway facilities and inspect railway tracks, locomotives and automated railway crossings. They also provide training and information sessions for industry, municipalities and other key stakeholders."

Most railways in Alberta operate under federal jurisdiction. Alberta Transportation regulates industrial spur lines used to load and unload railcars off of mainlines, rail lines operated by historical parks, and two short-haul public railways operated solely within Alberta to transport goods or passengers.

ALBERTA PREMIER RESPONDS TO FEDERAL GOVERNMENT ANNOUNCEMENT ON PIPELINE SAFETY SYSTEM

Premier Dave Hancock issued the following statement on new measures announced in May by the federal government to further enhance Canada's pipeline safety system:

"Alberta is committed to continuous improvement to the pipeline safety system, and we applaud today's announcement by the Government of Canada to improve pipeline safety across the country. Pipelines are a safe, efficient and reliable way for Canada to move its oil and gas products, and are critical to accessing key global markets for Canada's energy products.

"Our government is committed to opening new markets for our energy resources in a safe and sustainable manner.

"These actions build on the principles of prevention, liability and preparedness, and also recognize that meaningful aboriginal participation in pipeline safety discussions is imperative. The future of our energy industry rests with our reputation to act on initiatives that protect our environment and consider the important role of aboriginal participation.

"Every Canadian, no matter what province or territory they call home, expects that energy development is done with a high degree of environmental safeguards, and the Province of Alberta supports initiatives like those announced today that strengthen the responsible development of energy resources."

MCQUEEN PROMOTES ALBERTA INVESTMENT OPPORTUNITIES AT NORTH AMERICAN SUMMIT

Alberta's Minister of Energy Diana McQueen advocated for greater international trade and market access at an energy summit in support of more business and job opportunities in the province.

McQueen travelled to Delaware, Pennsylvania and New York from June 9 to June 12 to meet with U.S. industry representatives and represent the province at the North American Energy Summit.

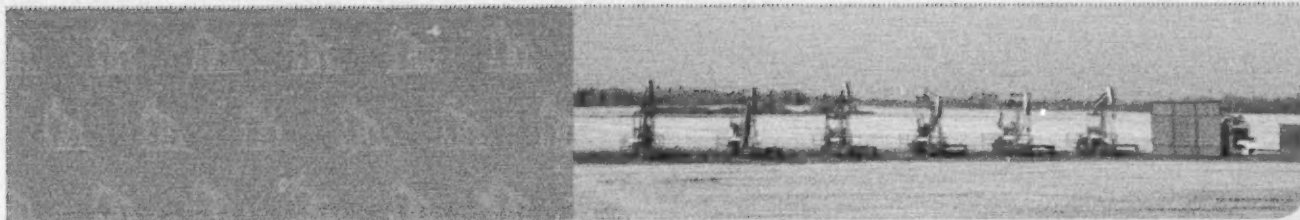
Minister McQueen's visit to Delaware included tours of east coast refineries looking to expand their processing and of refineries interested in taking on Alberta crude. Key meetings with companies and community leaders in Delaware and Philadelphia were designed to help Alberta open new markets by showcasing the province's record of responsible energy development.

The energy summit brought together leading energy-sector decision makers and provided McQueen with the opportunity to highlight Alberta's role as a leading responsible producer of sustainable energy and contributor to North American energy security.

"Investors from around the world come to Alberta because this province is a great place to do business, and we need to encourage further investment. North America has the ability to supply the world with energy resources," McQueen said.

"A stronger Alberta-U.S.-Mexico partnership will increase our ability for increased exports, create additional investment and allow us to work together on shared opportunities." ■





What's new in the oil and gas industry

ALBERTA REPLACED 112 PER CENT OF CRUDE OIL PRODUCTION IN 2013

New drilling, in addition to new and expanded enhanced oil recovery (EOR) schemes, added 37.9 million cubic metres of conventional crude oil last year, replacing 112 per cent of the 33.8 million cubic metres (212,600 barrels per day) of production, said a new reserves report from the Alberta Energy Regulator (AER).

While that was lower than last year's replacement rate of 189 per cent, it still outpaced the previous five-year average of 83 per cent, said the report, *Alberta's Energy Reserves 2013 and Supply/Demand Outlook 2014-2023*. Revisions to existing reserves added another 10.1 million cubic metres. The total increase in initial established reserves for 2013 amounted to 48.1 million cubic metres, compared to 58.5 million cubic metres in 2012.

The total initial in-place resources for conventional oil in Alberta stand at 12.51 billion cubic metres.

The AER estimates remaining established reserves of conventional crude in Alberta of 283.4 million cubic metres, representing about one-third of Canada's remaining conventional reserves. The figure comprises 217.2 million cubic metres of light-medium crude and 8.9 million cubic metres of heavy crude.

The year-over-year increase of 14.2 million cubic metres, or 5.3 per cent, is the result of all reserve additions less production.

In 2013, the AER processed 98 applications, up from 53 the previous year, for new EOR schemes or expansions to existing schemes, resulting in total reserves additions of 2.2 million cubic metres,

equalling the 2012 total. Development of existing pools added established reserves of 30.8 million cubic metres.

At 9.82 billion barrels, the remaining in-place resources of conventional oil represent a substantial potential for increased recovery through EOR or new drilling and completion techniques, such as high-density drilling and multistage fracturing, said the report. On average, 25 per cent of the total oil in place in these pools is expected to be recovered with today's technology.

Additionally, a recent shale- and siltstone-hosted hydrocarbon resources study identified 67.32 billion cubic metres of unconventional in-place shale oil resources in six key shale formations in Alberta.

As of Dec. 31, 2013, oil reserves were assigned to 11,073 light-medium pools (up from 10,570 in 2012) and 2,939 heavy (2,804 in 2012) crude oil pools in the province, most consisting of a single well.

CANADIAN NATURAL GAS PRODUCERS SHOW STRONG RESERVE REPLACEMENT

Natural gas producers across Canada were able to more than replace production during 2013 with new reserves, despite a continued drop in the number of companies booking gas reserves.

Daily Oil Bulletin data on 126 producers indicates year-end 2013 proved gas reserves of 36.91 trillion cubic feet, up 1.68 per cent from the start of the year.

There were 146 producers that booked proved Canadian gas reserves in 2012, and 166 that booked proved gas reserves in 2011.

Continued success during 2013 in tight gas plays and increased drilling in liquids-rich

plays—in concert with horizontal drilling and multistage fracturing—boosted overall proved gas reserves.

Data shows a record 4.72 trillion cubic feet of proved gas reserves were added through *Short-term Canadian Natural Gas Deliverability 2014-2016* discoveries and extensions.

Meanwhile, the same 126 companies reported Canadian production of 4.12 trillion cubic feet, indicating a production replacement rate of 115 per cent for 2013. If revisions are included, the production replacement rate for 2013 climbs to 143 per cent, a tie for the second-highest level in the past decade.

NEB STUDY SEES NATURAL GAS PRODUCTION GROWTH, HIGHER PRICES

The speed and degree to which natural gas storage is refilled after a colder-than-normal winter in Canada and the United States will be key factors influencing gas markets in 2014, said a new National Energy Board study.

"If the storage deficit is erased through a combination of higher U.S. natural gas production and reduced gas-fired power generation, the impact on Canadian natural gas deliverability may be moderate," said the board in its energy market assessment, *Short-term Canadian Natural Gas Deliverability 2014-2016*.

"Higher summer temperatures could increase gas-fired power generation because of increased air conditioning and compete with efforts to refill storage," it said. "Should the storage deficit prove more difficult to make up, natural gas prices may remain higher than in previous years and encourage more Canadian natural gas drilling and deliverability." ►

What's new in the oil and gas industry *continued*



A key mechanism in balancing markets during the 2014 storage refill season will be power generation, according to the study, which notes that in 2013, an estimated five billion cubic feet per day of demand (out of a roughly 80 billion cubic feet per day total market in the United States and Canada) came from increased natural gas-fired power generation at the expense of coal-fired power generation.

"This occurred because natural gas prices had declined below the corresponding cost of generating electricity using coal and some coal plants were retired," it said. "Now that natural gas prices have risen to around the corresponding price level of coal (about \$4.50 per gigajoule), the amount of natural gas-fired generation that will be idled in favour of coal will help to determine how much additional natural gas can be delivered into storage."

There's also the question as to whether the natural gas market perceives the 2013-14 winter as an isolated event or as a signal of a fundamental shift in market conditions.

"At this time, it seems to be viewed as an isolated event as natural gas forward prices for 2015 in the futures market return towards prior levels," said the study. "The absence of a

fundamental shift makes producers less likely to make major changes, such as a return to a higher, sustained level of dry gas drilling."

OVERSEAS OIL AND GAS EXPORTS VITAL, SAYS ENCANAL CEO

Shipping Canadian oil and natural gas overseas is of strategic importance to Canada and to the industry, Encana Corporation's annual meeting heard on May 13.

"When you actually think about strategic issues related to oil and gas, there may be none more important to Canada than to get Canadian gas and Canadian oil to Canadian tidewater," Encana president and chief executive officer Doug Suttles told shareholders.

"In my view, this is a strategic issue for the country, and it's a strategic issue for the industry. The world wants the products," Suttles said, adding that overseas exports would diversify markets for Canadian producers and "create supply security around the world."

Suttles, a former chief operating officer at the U.S. unit of BP p.l.c., joined Encana almost one year ago. Addressing his first Encana annual meeting, he talked about the Calgary-based producer's previously reported strategy to increase its liquids weighting and to focus on fewer areas. But he didn't get into a detailed discussion of each play.

The Encana president reminded shareholders of the transformation the North American oil and gas industry has undergone recently.

"If you just remember not very many years ago, we were talking about building liquified natural gas import terminals to import natural gas from outside North America... and many policymakers and politicians were debating the true cost of imported oil," he said.

"And here we sit today, and the situation is incredibly different. And I should actually remind you this is driven by a combination of technology and human energy that's driven real innovation in our industry," he said. "It's not the first time it's happened, and I would guess it won't be the last."

CERI STUDY IDENTIFIES BENEFITS OF ENERGY EAST PIPELINE

TransCanada Corporation's proposed Energy East Pipeline is expected to deliver significant benefits to the Canadian economy, including an additional \$33.9 billion in gross domestic product (GDP) over 28 years, said a new economic analysis by the Canadian Energy Research Institute (CERI).

Modelling also shows the proposed pipeline and export terminal that would begin operations in 2018 would generate an additional \$7.6 billion in total tax revenue for Canada, according to CERI. (TransCanada uses a capital cost of \$12 billion although an economic benefits study conducted by Deloitte LLP for TransCanada put the cost at \$11.3 billion in 2013 dollars, the CERI report noted.)

The major beneficiaries of the project are Ontario with GDP benefits of \$11.9 million and Quebec with \$8 billion, with a significant portion coming from personal income taxes, said CERI.

The project would also produce 321,000 one-year, full-time-equivalent jobs across Canada in the construction and operation phases. During the construction phase, jobs will peak at almost 48,700 and then level out at about 7,900 jobs during the operations phase, the study found.

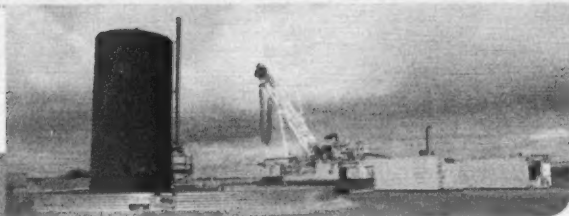
Energy East, which also includes an export terminal, would deliver 1.1 million barrels per day of crude oil and/or bitumen to eastern Canadian markets via a pipeline from Hardisty, Alta., to Saint John, N.B. The project will provide access to tidewater for Canadian crude production, which is forecast to potentially reach seven million barrels per day by 2030, said CERI.

The project could also benefit Canadian refineries by providing a stable supply of crude, reducing dependence on imported oil and improving netbacks, said the report, which does not include benefits to refiners.

Energy East includes the conversion of 3,000 kilometres of existing natural gas pipeline to crude oil service and the construction of about 1,460 kilometres of new pipeline to connect to the line. ■

TECHNOLOGY

UPDATE



PTAC LAUNCHES RECORD NUMBER OF NEW PROJECTS

With its emphasis on innovation and collaborative research and development, the Petroleum Technology Alliance Canada (PTAC) has an important role to play in promoting sustainable energy development in Alberta. Bev Yee, an assistant deputy minister for Alberta Environment and Sustainable Resource Development, said in May.

"Government alone cannot spearhead research and development that advances technology and efficiencies in the energy sector while reducing greenhouse gas emissions," the senior provincial government official told the organization's annual meeting. "Big industry, small business, researchers...all have a role to play as well."

Those who have been working in the field know there is no silver bullet to the highly complex challenge of minimizing the carbon footprint, said Yee, also the stewardship commissioner in the land-use secretariat. "It will take multiple technologies in order to meet the challenges of the 21st century."

In her speech, Yee praised PTAC for its collaborative approach. "The model of building partnerships with a wide variety of stakeholders to drive innovation in hydrocarbon development is truly remarkable," she said.

The organization, she said, is successfully mobilizing the combined brain trust of business, researchers and government to propel innovation, she said. "In my mind, this is the ideal template for achievement by fostering collaboration among a diverse range of stakeholders."

PTAC's work in areas such as hydraulic fracturing, zero emissions from wellsites, ecological issues, and pipeline research and impact is truly appreciated, not only by the industry, but also by the government, she said.

"Your commitment parallels very much what the Alberta government's commitment is to be a global leader in reducing greenhouse gas emissions and adapting to climate change."

In 2013, PTAC launched a record 40 new projects with the assistance of more than 275 volunteer technical experts who served on 22 technical steering committees. Soheil Asgarpour, PTAC president, told the meeting.

"The unprecedented 40 new projects combined with the 35 projects carried over from previous years testify to the gathering of momentum from industry interest in collaborative research and development," he said.

"The challenges facing Canada's hydrocarbon industry today are significant, but PTAC continues to accelerate the pace at which we are facilitating and transferring technologies. The strategic partnerships in 2013 allowed PTAC to recognize substantial benefits from cooperation across diverse disciplines that expanded the scope and research of technology interests," he added.

LIGHTSTREAM TO TRY NATURAL GAS EOR IN CARDIUM

Lightstream Resources Ltd. is considering both water and gas injection pilots in the Cardium Formation in Alberta by the end of 2014, said senior vice-president and chief operating officer Rene LaPrade.

The tight oil producer already has experience with natural gas-based enhanced oil recovery (EOR) from its projects in the Bakken Formation at Creelman in southeastern Saskatchewan.

"We will be leveraging our Bakken EOR experience and applying these new concepts in the Cardium and Swan Hills plays in 2014," LaPrade told the company's recent annual meeting.

At 20,270 barrels of oil equivalent per day, the Cardium was the biggest single source of Lightstream's production last year, ahead of its Bakken assets, which averaged just under 17,095 barrels of oil equivalent per day.

In tight reservoirs such as the Bakken, multi-frac horizontal wells will usually recover only about 15 per cent of the original oil in place on primary production, leaving 85 per cent of the oil behind, LaPrade said.

"That's a lot of oil that we're not getting to," he said after describing the gas-based EOR as "our gem" in the Bakken.

"[With] our natural gas injection project at Creelman, we believe we can increase these recoveries to 25 per cent of the original oil in place," LaPrade told shareholders. ■

LABOUR

UPDATE



EMPLOYMENT AND SOCIAL DEVELOPMENT CANADA ANNOUNCES FUNDING INITIATIVE

The petroleum industry is facing significant human resources (HR) challenges. An aging workforce, rapid technological innovation, and increased competition for talent and growth are creating labour and skill shortages. The petroleum industry will need strategic solutions to address the challenge.

The [Petroleum Human Resources Council](#) helps the industry develop a sustainable, skilled and productive oil and gas workforce. It accomplishes this by providing expert knowledge on petroleum labour market trends, occupational information and tools, and strategic HR intelligence and solutions for the industry, government and educators.

The council is pleased to announce that it has secured \$2.8 million in funding from [Employment and Social Development Canada](#) (ESDC) under the newly formed [Sectoral Initiatives Program](#) (SIP).

The SIP funds partnership-based projects that are national in scope or nationally significant, that support the development of labour market information, national occupational standards and certification/accreditation regimes, and that address skills shortages in strategic sectors of Canada's economy. ESDC was previously known as the Department of Human Resources and Skills Development Canada and was rebranded this year under a new name.

Funding of the three-year project allows the council to further develop its labour market information service to the industry and expand the occupational information and tools found on the [Careers in Oil + Gas](#) website. The council understands the need to continue to attract people to our industry, and up-to-date occupational information and tools will increase mobility and skills transferability of the labour force as well as build energy and career literacy across industry sectors and Canada.

The council's first project initiative is to continue producing annual labour market outlooks and quarterly human resources trends and insights reports with a focus on areas of oil and gas activity and key emerging sectors, such as the oil sands in Alberta, liquefied natural gas activity in British Columbia and the Bakken oilfield movement in Saskatchewan and Manitoba. The council's labour market information provides key stakeholders, such as industry employers across Canada, with information to help with their workforce planning.

Aside from funding provided by the Government of Canada, the Petroleum Human Resources Council will partner with multiple stakeholders, including provincial governments

and the industry, to ensure development and delivery of timely, relevant and credible labour market information on Canada's oil and gas industry.

GOVERNMENT OF CANADA ANNOUNCES A COMPREHENSIVE OVERHAUL OF THE TEMPORARY FOREIGN WORKER PROGRAM

The Government of Canada wants to ensure that the Temporary Foreign Worker Program (TFWP) is only used as intended, as a last and limited resort to fill acute labour shortages on a temporary basis when qualified Canadians are not available.

The reforms to the TFWP include:

1. Limiting access to the TFWP to ensure Canadians are first in line for available jobs
2. More and better labour market information for stronger screening
3. Stronger enforcement and tougher penalties

Read the full [Government of Canada announcement](#) for further details on the TFWP reforms.

2013 ALBERTA WAGE AND SALARY SURVEY

The recently released [2013 Alberta wage and salary survey](#) provides information on wages and salaries for full-time and part-time employees in Alberta by occupation, geographic area and industry group. This information can help you make informed compensation decisions and assist in developing competitive hiring policies.

UNITED STATES RECRUITING FACT SHEET

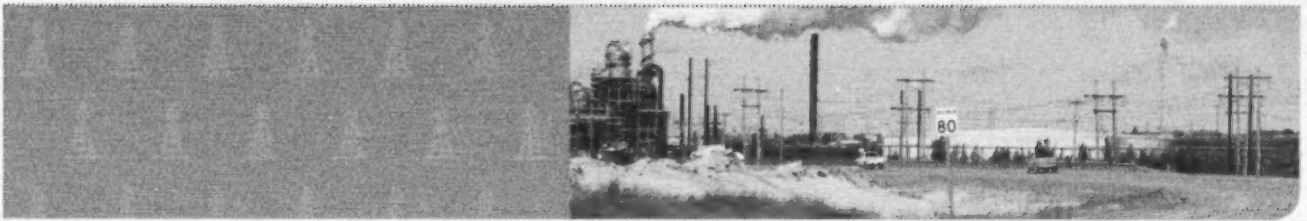
Are you recruiting internationally but have no idea where to start? The [United States recruiting fact sheet](#) provides information on the labour supply, migration trends and credential recognition, along with recruitment tips, to help you make informed recruitment decisions.

NEW LABOUR MARKET INFORMATION

The Alberta government recently released updated versions of both the Alberta [Short-Term Employment Forecast](#) and [Alberta's Occupational Demand and Supply Outlook](#). These resources can help you make decisions about future staffing programs and resources on a per-occupation basis.

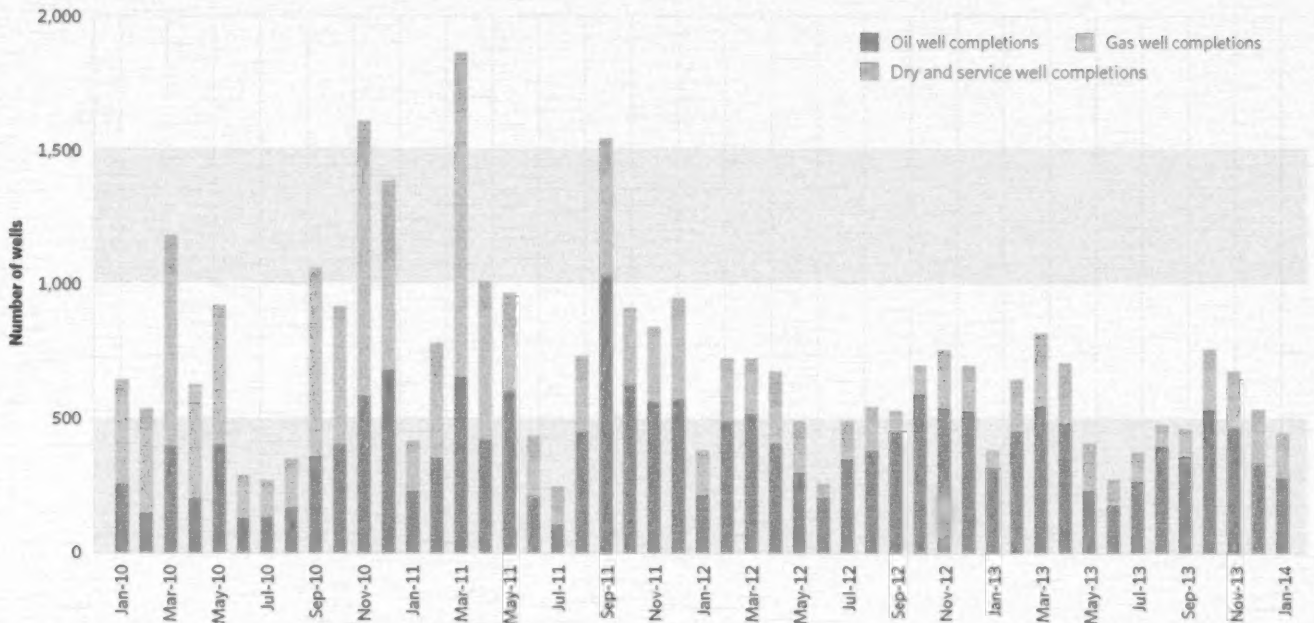
CONTACT US

Contact us with questions or concerns or for more information at ABWorkforceinfo@gov.ab.ca. ■



Oil and gas statistics

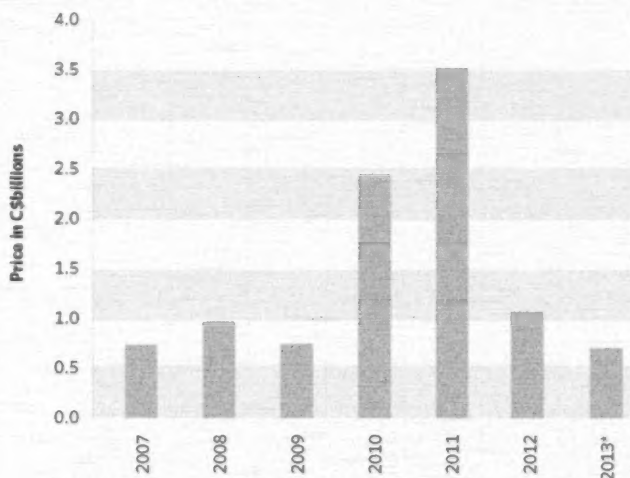
ALBERTA WELL COMPLETIONS



Source: Alberta Energy Services Ltd. Energy Group

ALBERTA CROWN LAND SALES

P51NG rights, excluding oil sands



*2013 preliminary data as of Dec. 31, 2013

Source: Alberta Energy Services Ltd.

WELL DEPTHS

	GAS			OIL		
	Total metres	Wells drilled	Avg. well depth (m)	Total metres	Wells drilled	Avg. well depth (m)
2009	6,638,293	4,194	1,583	5,448,442	3,574	1,524
2010	8,517,619.4	4,566	1,865	10,981,237	6,709	1,637
2011	7,253,946	2,800	2,591	15,387,285	8,891	1,731
2012	5,010,521	1,488	3,367	15,907,496	8,505	1,870
2013	5,198,392	1,528	3,402	15,327,052	8,181	1,873

Source: Alberta Energy Services Ltd. Energy Group

DRILLING RIG COUNT BY PROVINCE/TERRITORY

June 3, 2014

	ACTIVE	DOWN	TOTAL	ACTIVE (Per cent of total)
Western Canada				
Alberta	152	412	564	27%
Saskatchewan	64	83	147	44%
British Columbia	26	52	78	33%
Manitoba	0	16	16	0%
WC Total	242	563	805	30%
Northern Canada				
Northwest Territories	0	1	1	0%
Eastern Canada				
Quebec	0	1	1	0%
Canada	242	565	807	30%

Source: Saskatchewan Petroleum Industry Group

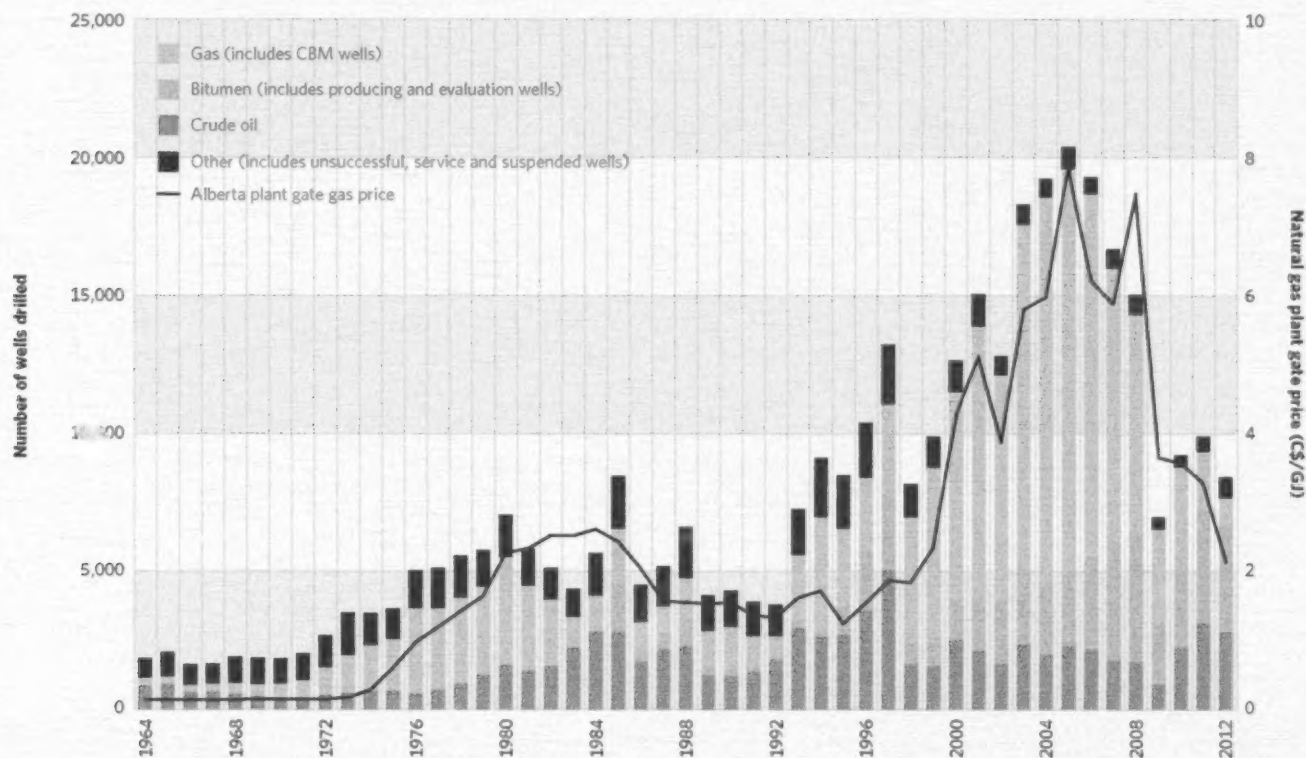
OIL & GAS WELL COMPLETIONS BY PROVINCE/TERRITORY

Western Canada, May 2014

	OIL WELLS		GAS WELLS	
	May 2013	May 2014	May 2013	May 2014
Western Canada				
Alberta	229	188	48	54
Saskatchewan	16	20	0	0
British Columbia	11	3	29	71
Manitoba	3	0	0	0
Total	259	211	77	125

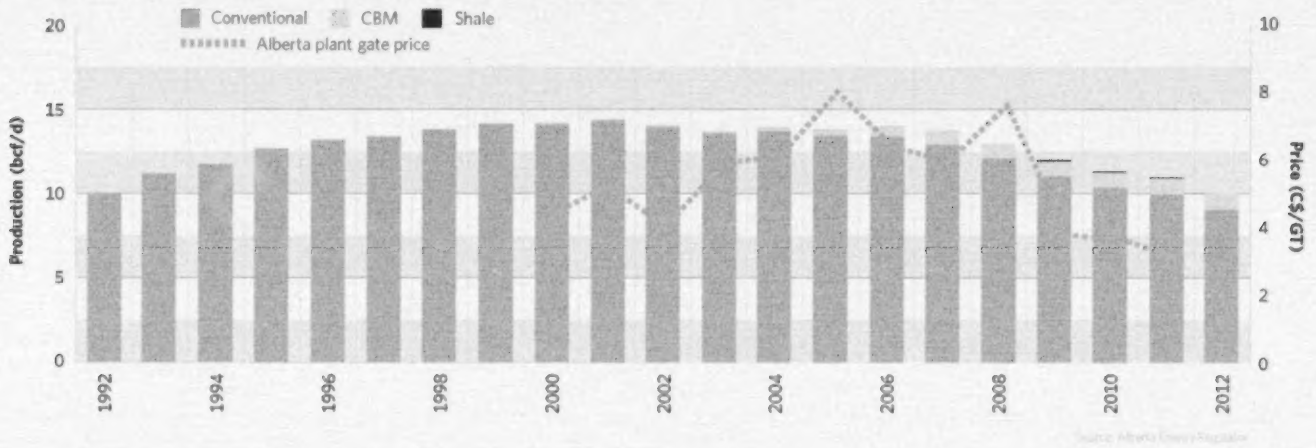
Source: Saskatchewan Petroleum Industry Group

DRILLING ACTIVITY IN ALBERTA, 1964 - 2012

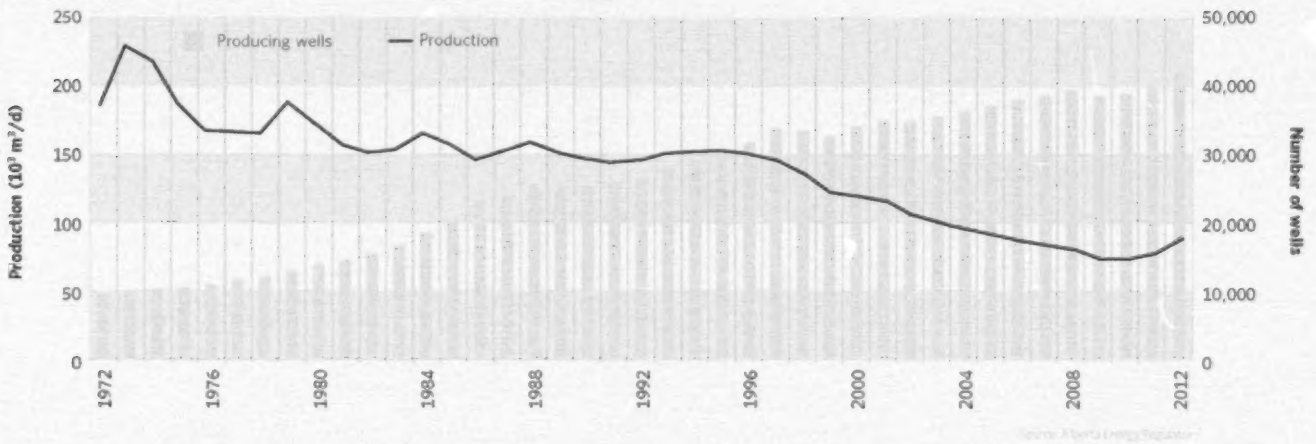


Source: Alberta Energy Regulator

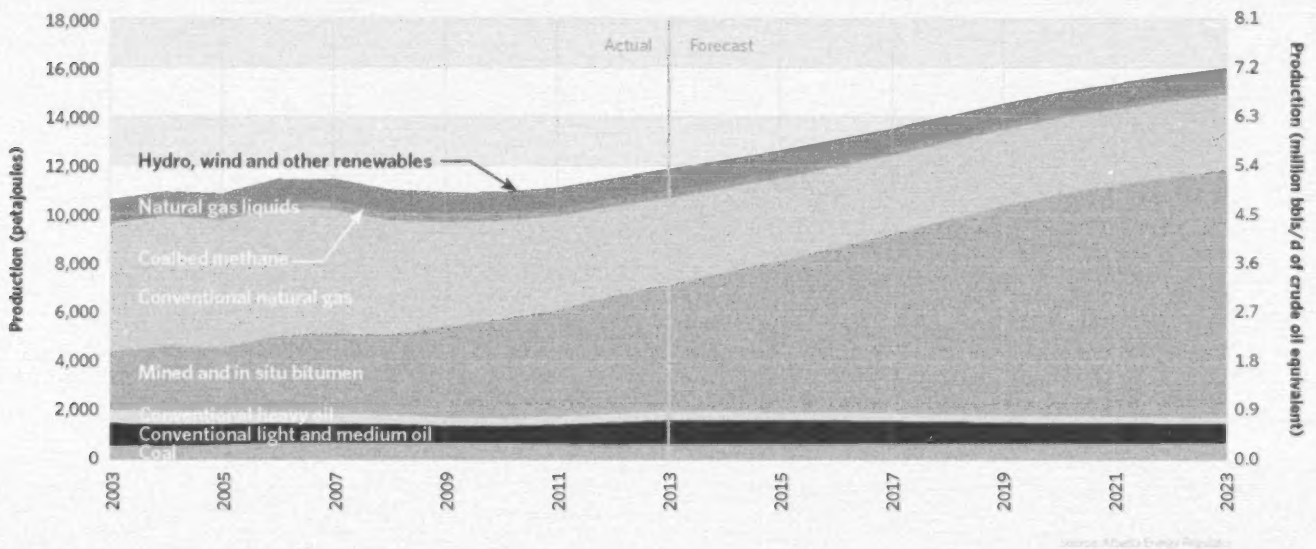
ALBERTA MARKETABLE GAS PRODUCTION



ALBERTA CRUDE OIL PRODUCTION AND PRODUCING WELLS



TOTAL PRIMARY ENERGY PRODUCTION IN ALBERTA



The Duvernay:

A rising star?

In December 2009, the Alberta government's final land sale of the year generated an eye-widening \$384.3 million—a bright spot in what had been, to that point, a pedestrian year for provincial Crown auctions.

The Duvernay play in Alberta's Deep Basin was identified as a chief reason for the high bonus bids paid at this sale, and this was merely the opening act—it kicked off an over-two-year boom in Crown land spending. The apex came on June 1, 2011, when Alberta attracted a massive \$843.03 million—an all-time high for a single sale—fuelled by the Duvernay.

With most of the prospective land spoken for, the question now is, Will the Duvernay fulfill its promise as the next star play of North America, or were those billions in land-acquisition dollars spent in vain?

According to a November 2013 study by BMO Capital Markets, drilling results over the last 1.5 years have confirmed the existence of multi-phase windows—dry gas, liquids-rich gas, volatile oil and black oil—and the ability of the reservoir to behave as a true, over-pressured shale reservoir and, from most windows, deliver hydrocarbons economically.

The Alberta government's royalty regime favours Duvernay gas wells over Duvernay oil wells, which suggests activity, at least in the near term, will be relegated to defining and drilling in the condensate- and natural gas liquids-rich windows, the study notes.

"It is with this continued investment that the Duvernay shale has emerged as a highly sought-after, world-class unconventional shale play, with a focus now on condensate—the new gold," BMO stated.

EARLY WELL RESULTS

Canadian Discovery Ltd. has identified 59 wells that report production from the Duvernay in Alberta, with 50 of these wells still on stream at Aug. 31, 2013.

The well with the highest oil rate is a Royal Dutch Shell plc well in the Kaybob field at 15-09-063-20W5, which averaged about 200 barrels of oil per day during that month. The best condensate rate was from an Encana Corporation well at 06-09-063-23W5 in the Waskahigan field, which averaged 480 barrels per day. And the best gas rate came from a Chevron Canada Limited well at Kaybob South 02-16-062-20W5, which averaged about 2.5 million cubic feet per day in August.

It's still too early to declare the play a commercial success, Canadian Discovery admitted, as operators are currently experiencing a range of successes.

"However, indications are that after operators determine the areas with the greatest potential and which completion programs work effectively in those areas, the project costs will come down significantly enough to provide long-term strong economics," the firm said.

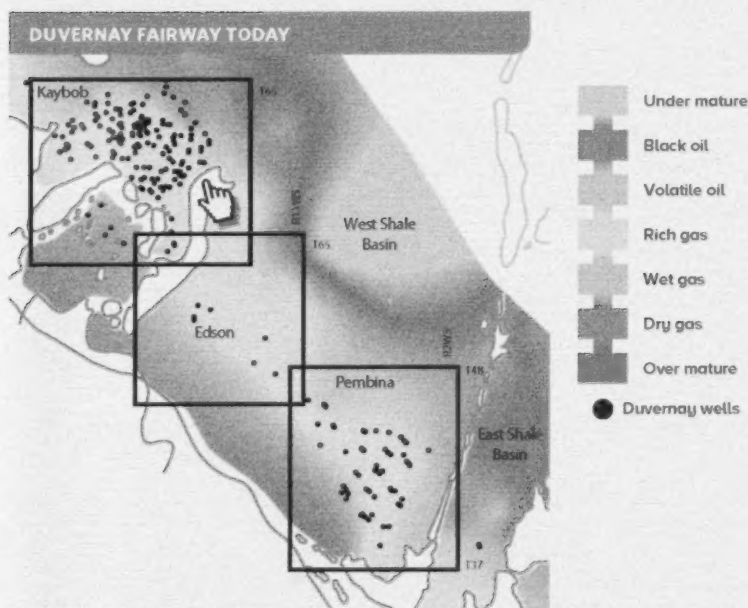
FUTURE DEVELOPMENT

Brad Hayes, president of Petrel Robertson Consulting Ltd., said that while 2014 will be an important year for the Duvernay, he did not characterize it as a pivotal one. Companies will continue to optimize their drilling and completions practices, and some, such as Chevron and Encana, will ramp up development in areas they see as economic.

"The play will progress, but it's unlikely there will be any pivotal events that will suddenly change the course of overall development—we're a few years into it, and there are many more to go," he said. "Duvernay lands in the areas where commerciality is reasonably envisioned—around the liquids-rich part of the fairway—are quite tightly held.

"There are some land opportunities in areas of uncertain economic merit—in the dry gas or oil areas—but there is unlikely to be much more land activity in these areas until their productive and commercial merits are proven up."

BMO said the type well economics show that liquids-rich Duvernay gas wells are profitable and that the condensate has the greatest impact on value. This has led to operators pushing the play boundaries further into the oily phase window in their quest for higher condensate yields. ■



Source: GeoDEV's GeoDEV1, BMO Capital Markets

A snapshot of some major players in the Duvernay

With most of the prospective liquids-rich Duvernay land in Alberta's Deep Basin tied up, producers are slowly starting to drill the play in an attempt to prove up its potential.

The following is a summary of some of the companies with an acreage position in the Duvernay and their recent activity and plans for the near term.

ENCANA COMMERCIALIZES DUVERNAY

Encana Corporation has deemed its liquids-rich Duvernay plays in the Kaybob and Simonette areas of Alberta commercial, a conference call heard on May 13.

Asked whether the company's Duvernay wells in northwestern Alberta can be considered commercial, Encana president and chief executive officer Doug Suttles replied: "What we've done is distinguished the northern part of our position versus the southern. So the Kaybob/Simonette area we consider commercial today, and that's why we are moving forward on two eight-well pads.

"In the south—an area we refer to as Willesden Green—we're still in appraisal there, and we haven't made that decision. But in the northern part of the Duvernay... we consider both of those areas very commercial, very attractive places to invest."

In the first quarter, Encana's Duvernay production averaged 1,400 barrels per day of oil and natural gas liquids and eight million cubic feet per day of gas.

The two eight-well pads were spud during the first quarter. Equipment and supplies were stockpiled to enable the running of five rigs and continued facility construction through spring breakup.

Chief operating officer Michael McAllister said Encana now has 10 horizontal wells that



are being tested or are on production in the Kaybob/Simonette area. "Some of these wells date back to 2012, and the results have continued to improve over time," he said.

KAYBOB MOST PROMISING AREA FOR DUVERNAY SO FAR: ATHABASCA

The Kaybob area looks to be the most promising area for the Duvernay so far, according to Athabasca Oil Corporation, which is expected to expand its drilling program in the emerging shale play later this year.

Sveinung Svarte, president and chief executive officer, said the company plans to increase its Duvernay activity when PetroChina Company Limited's Phoenix Energy Holdings Limited put/call is "in the bank." On May 8, the company announced it is increasing its capital budget in 2014 by \$29 million, which will include an expanded Duvernay drilling program in the second half of the year.

"The Duvernay deposits are very large. Having said that, they are probably not excellent everywhere," Svarte told the company's annual meeting. "Where we are located around... Kaybob, it's basically the place in [the] Duvernay where it looks to be the most promising so far.

"There's a very large resource-in-place figure in these lands, at up to 700 barrels per million cubic feet of free condensate. [It's] very rich, and the initial results

actually compare very favourably to what we know from the south—from the Eagle Ford [shale in Texas]."

As of May 8, Athabasca had drilled eight horizontal Duvernay wells across the fairway, with four wells on production at the end of the first quarter of 2014.

TALISMAN LOOKS FOR DUVERNAY JOINT VENTURE

A joint-venture partner would help Talisman Energy Inc. appraise and develop a larger percentage of its Duvernay shale gas acreage, according to Hal Kvisle, president and chief executive officer.

The company currently holds interests in approximately 352,000 net acres of land in the liquids-rich Duvernay play located in central Alberta. During 2013, Talisman drilled three wells in the Duvernay play.

To date, 10 wells have been drilled, including two wells drilled in the first quarter of 2014, primarily to retain acreage. The company plans to pursue third-party funding, possibly through a joint venture, to develop the play going forward.

"We hold this enormous land position, and we literally have locations to drill several thousand horizontal wells; you can calculate how many billion dollars of capital that would work out to at roughly \$10 million or more per well," Kvisle told the company's recent annual general meeting. ■

For more on the Duvernay, see the *Daily Oil Bulletin's* special digital magazine of the play.

CONTACTS

Industry Associations

- Alberta Land Surveyors' Association www.alsa.ab.ca
- Canadian Association of Geophysical Contractors www.cagc.ca
- Canadian Association of Oilwell Drilling Contractors www.caodc.ca
- Canadian Association of Petroleum Producers www.capp.ca
- Canadian Energy Pipeline Association www.cepa.com
- Canadian Gas Association www.cga.ca
- Canadian Natural Gas www.canadiannaturalgas.ca
- Canadian Natural Gas Vehicle Alliance www.cngva.org
- Canadian Society of Exploration Geophysicists www.cseg.ca
- Canadian Society of Petroleum Engineers www.speca.ca
- Canadian Society for Unconventional Resources www.csur.com
- Gas Processing Association Canada www.gpacanada.com
- Petroleum Services Association of Canada www.psac.ca
- Petroleum Technology Alliance Canada www.ptac.org
- Explorers and Producers Association of Canada www.explorersandproducers.ca

Alberta Government

- Alberta Energy www.energy.gov.ab.ca
- Alberta Environment and Sustainable Resource Development www.esrd.alberta.ca
- Alberta Innovation and Advanced Education www.eae.alberta.ca
- Alberta Energy Regulator www.aer.ca
- Alberta Innovates www.albertainnovates.ca
- Alberta Geological Survey www.ags.gov.ab.ca
- Alberta Surface Rights Board www.surfacerights.gov.ab.ca

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